

What is claimed is:

1        1.        A method for analyzing accuracy of industrial measurement data, the method  
2        comprising the steps of:

3                compiling a plurality of measurements of a primary characteristic from a  
4        representative cross-section of a population of devices;

5                providing a modeling function;

6                determining a variance from the modeling function for each measurement in the  
7        plurality of measurements to form a corresponding plurality of variances;

8                evaluating the plurality of variances for discontinuities;

9                identifying a discontinuity within the plurality of variances; and

10                utilizing the discontinuity to determine a demarcation between accurate and  
11        inaccurate measurement data.

1        2.        The method of claim 1, wherein the industrial measurement data comprises  
2        semiconductor manufacturing measurement data.

1        3.        The method of claim 1, wherein the step of compiling a plurality of measurements  
2        further comprises compiling a plurality of measurements from a profilometer.

1        4.        The method of claim 2, wherein the primary characteristic comprises dishing in  
2        metal.

1        5.        The method of claim 2, wherein the primary characteristic comprises dishing in  
2        copper.

1        6.        The method of claim 1, wherein the representative cross-section of a population of  
2        devices comprises multiple sites around a single device.

1        7.        The method of claim 1, wherein the representative cross-section of a population of  
2        devices comprises multiple devices within the population of devices.

1        8.        The method of claim 1, wherein the step of providing a modeling function further  
2        comprises providing a constant value.

1        9.        The method of claim 1, wherein the step of providing a modeling function further  
2        comprises providing a function relating the primary characteristic to a secondary  
3        characteristic.

1        10.       The method of claim 9, wherein the function is linear.

1        11.       The method of claim 9, wherein the function is parabolic.

1        12.       The method of claim 1, wherein the step of determining a variance from the modeling  
2        function further comprises determining a residual value.

1       13.     The method of claim 1, wherein the step of evaluating the plurality of variances for  
2       discontinuities further comprises a graphical evaluation.

1       14.     The method of claim 13, wherein at least a portion of the graphical evaluation is  
2       manual.

1       15.     The method of claim 1, wherein the step of evaluating the plurality of variances for  
2       discontinuities further comprises a non-graphical evaluation.

1       16.     The method of claim 15, wherein at least a portion of the non-graphical evaluation is  
2       manual.

1       17.     The method of claim 15, wherein the non-graphical evaluation is performed  
2       exclusively by a processor.

1       18.     A system analyzing the accuracy of industrial measurement data, the system  
2       comprising:

3             a construct for compiling a plurality of measurements of a primary characteristic from  
4       a representative cross-section of a population of devices;

5             a modeling function;

6             a construct for determining a variance from the modeling function for each  
7       measurement in the plurality of measurements to form a corresponding plurality of variances;

8             a construct for evaluating the plurality of variances for discontinuities;

9             a construct for identifying a discontinuity within the plurality of variances; and

10           a construct for determining a demarcation between accurate and inaccurate  
11 measurement data based on the discontinuity.

1       19.    A method for analyzing accuracy of post-CMP dishing measurements rendered by a  
2 profilometer in a semiconductor manufacturing process, the method comprising the steps of:

3           compiling a plurality of dishing measurements from a representative cross-section of  
4 semiconductor devices;

5           providing a modeling function;

6           determining a variance from the modeling function for each dishing measurement in  
7 the plurality of dishing measurements to form a corresponding plurality of variances;

8           evaluating the plurality of variances for discontinuities;

9           identifying a discontinuity within the plurality of variances; and

10          utilizing the discontinuity to determine a demarcation between accurate and  
11 inaccurate dishing measurement data.

1       20.    The method of claim 19, wherein the dishing comprises dishing in metal.

1       21.    The method of claim 19, wherein the dishing comprises dishing in copper.

1       22.    The method of claim 19, wherein the representative cross-section of semiconductor  
2 devices comprises multiple sites around a semiconductor wafer.

1       23.    The method of claim 19, wherein the representative cross-section of semiconductor  
2 devices comprises multiple semiconductor wafers within a lot of semiconductor wafers.

1        24.     The method of claim 19, wherein the representative cross-section of semiconductor  
2        devices comprises multiple semiconductor wafers within multiple lots of semiconductor  
3        wafers.

1        25.     The method of claim 19, wherein the step of providing a modeling function further  
2        comprises providing a constant value.

1        26.     The method of claim 19, wherein the step of providing a modeling function further  
2        comprises providing a function relating the dishing to a secondary characteristic.

1        27.     The method of claim 26, wherein the step of providing a modeling function further  
2        comprises providing a function relating the dishing to reticle density.

1        28.     The method of claim 26, wherein the function is linear.

1        29.     The method of claim 26, wherein the function is parabolic.

1        30.     The method of claim 19, wherein the step of determining a variance from the  
2        modeling function further comprises determining a residual value.

1        31.     The method of claim 19, wherein the step of evaluating the plurality of variances for  
2        discontinuities further comprises a graphical evaluation.

1       32.     The method of claim 31, wherein at least a portion of the graphical evaluation is  
2       manual.

1       33.     The method of claim 19, wherein the step of evaluating the plurality of variances for  
2       discontinuities further comprises a non-graphical evaluation.

1       34.     The method of claim 33, wherein at least a portion of the non-graphical evaluation is  
2       manual.

1       35.     The method of claim 33, wherein the non-graphical evaluation is performed  
2       exclusively by a processor.